

# Alkaline Phosphatase may predict tumour volume in patients with parathyroid adenoma

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## Background

Small parathyroid adenomas can be difficult to detect in ultrasound scan even in good hands and radiologists are helped by clinical and biochemical data to predict ease of adenoma detection.

## Aim

We investigated whether any factors could predict adenoma size.

## Methods

Retrospective analysis of patients who had undergone parathyroidectomy between 2010 and 2013. Linear regression analysis was performed and reported as odds ratio (=OR, 95% confidence interval CI).

## Results

74 patients were identified; (52 Female), age range (21 to 91 years old).

Different models and correlations were tested; Table 1 and Figure 1 show the model for histological width

**Table 1:** Linear regression Model Histologic Width

Variable	Mean (SD)	Odds Ratio (95% CI)	P Value
Age (year)	57.02 (15.2)	0.172 (-0.028, 0.184)	0.148
Calcium (mmol/l)	2.81 (0.21)	0.105 (-4.214, 10969)	0.378
PTH (iu/l)	30.32 (33.0)	0.231 (-0.001, 0.096)	0.056
Vit D* ng/l	26.67 (14.6)	-0.141 (-0.241, 0.102)	0.418
ALP (mg/l)	116.72 (56.3)	0.033 (0.006, 0.061)	<b>0.018</b>
USS width (mm)	16.48 (6.1)	0.574 (0.337, 0.810)	<b>&lt;0.001</b>

In other models;

There was a very close correlation between tumour volume on scan and histology (Pearson correlation 0.803, P<0.001).

Regression analysis with 3 blood tests (ALP, Ca, PTH), showed that ALP was the only independent predictor of tumour size [OR = 0.012(0.003, 0.022)].

## Limitations

- 1- Small Sample size
- 2- Missing Vit D levels for almost half of the cohort

## Discussion

Excellent radiological expertise would accurately predict the adenoma size.

The correlation between ALP and tumour volume may suggest that the presence of metabolic bone disease is a marker of adenoma size.

**Figure 1** shows the Pearson correlation for histological width.

